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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 448,277	11 24 1999	WOONG SIK CHOI	8733.20015	4859

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EXAMINER

QI, ZHI QIANG

ART UNIT PAPER NUMBER

2871

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/448,277

Applicant(s)

CHOI, WOONG SIK

Examiner

Mike Qi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,3-6,9-12,14-18 and 20-22 is/are rejected.
- 7) ☐ Claim(s) 2,7,8,13 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,226,057 (Lee) in view of US 5,953,088 (Hanazawa et al).

Claims 1 and 12, Lee discloses (col. 3, line 45 – col.7, line 45; Figs.2A and 2B) a liquid crystal display device comprising:

- substrate (12);
- first and second gate lines (14m, 14m-1) formed on the substrate (12);
- first and second source bus lines (data lines) (22n-1, 22n) intersecting the first and second gate lines (14m, 14m-1) so as to define a pixel region, wherein each of the first data line (22n-1) and the second data line (22n) has longitudinally separated first and second regions (i.e., the data lines are overlapped by the pixel electrode 26n);
- insulating film (28) covering the first and the second gate lines (14m, 14m-1) and the first and the second data lines (22n-1, 22n);
- pixel electrode (26n) disposed in the pixel region, the pixel electrode (26n) overlapping a region of the first data line (22n-1), the pixel electrode (26n) overlapping a region of the second data lines (22n);

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- switching element (TFT, T1) disposed in the pixel region and connected between the second gate line (14m-1) and the pixel electrode (26n).

Lee does not expressly disclose that one of the first and second regions of the first data line and one of the first and second regions of the second data line are not overlapped by the pixel electrode, i.e., the adjacent pixel electrodes are not overlapped each other.

However, Hanazawa discloses (col.4, lines 11-27; Fig.3) that the adjacent pixel electrodes (51) and (54) are not overlapped, and the pixel electrode (51) overlaps the a region of the first data line (50a) and a region of the second data line (50b), such that the capacitive coupling between the pixel electrode (51) and the data line (50a) and the capacitive coupling between the pixel electrode (54) and the data line (50a) can be reduced uniformly. As a result, the influence of the parasitic capacitance corresponding to the capacitive coupling can be suppressed to a minimum, so as to improve the image quality. Hanazawa indicates (col.1, lines 34-40) that the image quality of the liquid crystal display device is liable to be influenced by a parasitic capacitance corresponding to a capacitive coupling between the signal line and the pixel electrode.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the adjacent pixel electrodes are not overlapped as claimed in claims 1 and 12 for improving the image quality.

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3. Claims 3-6, 9-11, 14-18 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Hanazawa as applied to claims 1 and 12 above, and further in view of US 5,757,444 (Takemura).

Claims 3, 9, 14 and 20, using reflective pixel electrode in a reflection type LCD was common and known in the art as employing high reflective material such as aluminum as the pixel electrode for achieving thin and light-weight and low electricity consuming.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use reflective pixel electrode as claimed in claims 3, 9, 14 and 20 for achieving low electricity consuming.

Claims 4, 10, 15, and 21, Takemura discloses (col.7, lines 41-45) that the overlap between the picture-element electrode and the data line is also symmetrical between right and left side (i.e., the first and the second regions, the right side and the left side overlapping regions, are approximately the same), and by proper performing the alternation of the data line as described above, the cross-talk is completely removed.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the first and the second region are approximately the same as claimed in claims 4, 10, 15 and 21 for removing the cross-talk.

Claims 5 and 16, Takemura discloses (col.6, lines 48-67; Fig.4) that the signal to be applied to the data lines Y_m and Y_{m+1} have the same pulse height and opposite polarity (alternating current driving method), and thus affection of these data lines on the picture-element electrode (pixel electrode) is mutually offset. Takemura indicates that as

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a result, there occurs no cross-talk which would be induced by the coupling between the data line and the picture-element electrode (pixel electrode).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use an alternating current driving method as claimed in claims 5 and 16 for suppressing the cross-talk phenomenon.

Claims 6, 11, 17 and 22, Lee discloses (col.4, lines 30-34; Fig.2A) that the pixel electrode (26n) are beyond the adjacent source bus lines (data lines) arranged at left and right sides thereof and then extended to edges of the adjacent pixel electrodes in row direction, i.e., the pixel electrode extends over the data lines.

Claim 18, Lee discloses (col.4, lines 30-34; Fig.2A) that the pixel electrode (26n) are beyond the adjacent source bus lines (data lines) arranged at left and right sides thereof and then extended to edges of the adjacent pixel electrodes in row direction, i.e., the pixel electrode extends over the data lines.

Allowable Subject Matter

4. Claims 2, 7-8,13 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither teaches nor discloses that a liquid crystal display device comprises various elements, more specifically, as the following:

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the pixel electrode overlaps the first and second data lines by whole width of the data lines and by a substantially one-half length of each one of the first and second the data lines [claims 2, 7-8,13 and 19].

The closest reference US 6,226,057 (Lee) discloses (Fig.2A) that the pixel electrode (26n) overlaps the first and the second data lines (22n-1, 22n) by whole width of the data lines, but it does not teach that the pixel electrode overlaps the data lines by a substantially one-half length of the data lines. The claim 7 is dependent on the claim 2, so that the claims 2 and 7 contain the subject matter described above.

Response to Arguments

5. Applicant's arguments filed on Apr.24, 2002 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) The reference Lee does not teach or suggest one of the first and second regions of the first data line and one of the first and second regions of the second data line are not overlapped by the pixel electrode, i.e., the adjacent pixel electrodes are not overlapped each other.

Examiner's responses to Applicant's **only** arguments are as follows:

1) the reference Hanazawa discloses (col.4, lines 11-27; Fig.3) that the adjacent pixel electrodes (51) and (54) are not overlapped, and the pixel electrode (51) overlaps the a region of the first data line (50a) and a region of the second data line (50b), such that the capacitive coupling between the pixel electrode (51) and the data line (50a) and

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the capacitive coupling between the pixel electrode (54) and the data line (50a) can be reduced uniformly. As a result, the influence of the parasitic capacitance corresponding to the capacitive coupling can be suppressed to a minimum, so as to improve the image quality. Hanazawa indicates (col.1, lines 34-40) that the image quality of the liquid crystal display device is liable to be influenced by a parasitic capacitance corresponding to a capacitive coupling between the signal line and the pixel electrode.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213. The examiner can normally be reached on 349.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Mike Qi
January 6, 2003